

CURRENT CLAIMS

A copy of the claims is provided for the convenience of the Examiner. The claims are not amended.

1. (Original) A stamping tool comprising:

a stamp capable of imprinting at least one deposit of deformable material on an integrated circuit substrate;

wherein said stamping tool is capable of aligning a position of said stamp with respect to at least one tooling hole in said integrated circuit substrate.

2. (Original) The stamping tool as set forth in Claim 1 wherein said stamping tool is capable of aligning a position of said stamp with respect to at least one tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns.

3. (Original) The stamping tool as set forth in Claim 1 comprising:

- a first stamping tool column having a lower end capable of fitting within a first tooling hole in said integrated circuit substrate;
- a second stamping tool column having a lower end capable of fitting within a second tooling hole in said integrated circuit substrate;
- a stamping tool cross member attached to an upper end of said first stamping tool column and attached to an upper end of said second stamping tool column;
- a first stamp slide member attached to a first side of said stamp, said first stamp slide member having portions that form an aperture for slidably receiving said first stamping tool column; and
- a second stamp slide member attached to a second side of said stamp, said second stamp slide member having portions that form an aperture for slidably receiving said second stamping tool column;

wherein said stamp may be slidably disposed on said first stamping tool column and on said second stamping tool column.

4. (Original) The stamping tool as set forth in Claim 3 wherein said stamping tool is capable of aligning a position of said stamp with respect to a location of said first tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns; and

wherein said stamping tool is capable of aligning a position of said stamp with respect to a location of said second tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns.

5. (Original) The stamping tool as set forth in Claim 3 wherein said lower end of said first stamping tool column is capable of fitting within said first tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns; and

wherein said lower end of said second stamping tool column is capable of fitting within said second tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns.

6. (Original) The stamping tool as set forth in Claim 5
wherein said first stamping tool column is capable of slidably fitting within said first slide member attached to said stamp to within a tolerance of less than one hundred microns; and
wherein said second stamping tool column is capable of slidably fitting within said second slide member attached to said stamp to within a tolerance of less than one hundred microns.

7. (Original) The stamping tool as set forth in Claim 3 further comprising a heating element associated with said stamp.

8. (Original) The stamping tool as set forth in Claim 1 comprising:

a stamping tool base comprising a first tooling hole alignment button capable of fitting within a first tooling hole in said integrated circuit substrate and a second tooling hole alignment button capable of fitting within a second tooling hole in said integrated circuit substrate;

a first stamping tool column having a lower end attached to said stamping tool base;

a second stamping tool column having a lower end attached to said stamping tool base;

a stamping tool cross member attached to an upper end of said first stamping tool column and attached to an upper end of said second stamping tool column;

a first stamp slide member attached to a first side of said stamp, said first stamp slide member having portions that form an aperture for slidably receiving said first stamping tool column; and

a second stamp slide member attached to a second side of said stamp, said second stamp slide member having portions that form an aperture for slidably receiving said second stamping tool column;

wherein said stamp may be slidably disposed on said first stamping tool column and on said second stamping tool column.

9. (Original) The stamping tool as set forth in Claim 8 wherein said stamping tool is capable of aligning a position of said stamp with respect to a location of said first tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns; and

wherein said stamping tool is capable of aligning a position of said stamp with respect to a location of said second tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns.

10. (Original) The stamping tool as set forth in Claim 8 wherein said first tooling hole alignment button is capable of fitting within said first tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns; and

wherein said second tooling hole alignment button is capable of fitting within said second tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns.

11. (Original) The stamping tool as set forth in Claim 10
wherein said first stamping tool column is capable of slidably fitting within said first slide member attached to said stamp to within a tolerance of less than one hundred microns; and
wherein said second stamping tool column is capable of slidably fitting within said second slide member attached to said stamp to within a tolerance of less than one hundred microns.
12. (Original) The stamping tool as set forth in Claim 8 further comprising a heating element associated with said stamp.
13. (Original) A method for aligning an integrated circuit die on an integrated circuit substrate, the method comprising the steps of:
placing a plurality of deposits of deformable material on said integrated circuit substrate where said integrated circuit die is to be attached to said integrated circuit substrate;
placing a stamping tool into at least one tooling hole within said integrated circuit substrate;
imprinting said plurality of deposits of deformable material with said stamping tool; and
placing said integrated circuit die into a pocket formed in said plurality of deposits of deformable material.

14. (Original) The method as set forth in Claim 13 wherein said stamping tool is capable of imprinting said plurality of deposits of deformable material to within a tolerance of less than one hundred microns with respect to at least one tooling hole in said integrated circuit substrate.

15. (Original) The method as set forth in Claim 13 wherein said plurality of deposits of deformable material is composed of one of: a metal, a solder material and a polymer material.

16. (Original) The method as set forth in Claim 14 further comprising the step of heating said deposits of deformable material.

17. (Original) A method for aligning an integrated circuit die on an integrated circuit substrate of the type comprising a first tooling hole and a second tooling hole, the method comprising the steps of:

placing a plurality of deposits of deformable material on said integrated circuit substrate where said integrated circuit die is to be attached to said integrated circuit substrate;

placing said integrated circuit substrate on a stamping tool base of a stamping tool;

imprinting said plurality of deposits of deformable material with a stamp of said stamping tool;

removing said integrated circuit substrate from said stamping tool base of said stamping tool; and

placing said integrated circuit die into a pocket formed in said plurality of deposits of deformable material created by imprinting said plurality of deposits of deformable material with said stamp of said stamping tool.

18. (Original) The method as set forth in Claim 17 wherein said step of placing said integrated circuit substrate on a stamping tool base of a stamping tool comprises the steps of:

placing a first tooling hole alignment button of said stamping tool base within said first tooling hole of said integrated circuit substrate to within a tolerance of less than one hundred microns; and

placing a second tooling hole alignment button of said stamping tool base within said second tooling hole of said integrated circuit substrate to within a tolerance of less than one hundred microns.

19. (Original) The method as set forth in Claim 17 wherein said step of imprinting said plurality of deposits of deformable material with a stamp of said stamping tool comprises the steps of:

aligning a position of said stamp with respect to a location of said first tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns;

aligning a position of said stamp with respect to a location of said second tooling hole in said integrated circuit substrate to within a tolerance of less than one hundred microns; and

imprinting said plurality of deposits of deformable material with said stamp.

20. (Original) The method as set forth in Claim 17 wherein said plurality of deposits of deformable material is composed of one of: a metal, a solder material and a polymer material.

21. (Original) The method as set forth in Claim 17 further comprising the step of heating said deposits of deformable material.

22. (Original) The method as set forth in Claim 17 further comprising the step of creating at least one geometrical alignment guide feature in at least one deposit of deformable material on said integrated circuit substrate.